CLAIMS

1. A magnetic media hard disk, comprising:

a substrate;

a magnetic layer;

at least one underlayer being disposed between said substrate and said magnetic layer;

an overcoat layer being disposed above said magnetic layer, said overcoat layer being comprised of diamond-like carbon (DLC), and wherein carbon atoms of said DLC layer are generally implanted into said magnetic layer to a depth of less than approximately 10 Å, and wherein the density of said overcoat layer is between approximately 2.0 g/cm^3 and approximately 2.9 g/cm^3.

2. A magnetic disk as described in claim 1 wherein the thickness of said overcoat layer is from approximately 25 Å to approximately 100 Å.

3. A magnetic disk as described in claim 1 wherein the thickness of said overcoat layer is from approximately 25 Å to approximately 60 Å.

4. A magnetic disk as described in claim 1 wherein the thickness of said overcoat layer is approximately 35 Å.

5. A magnetic disk as described in claim 1 wherein said overcoat layer includes nitrogen.

6. A magnetic disk as described in claim 5 wherein said overcoat layer includes nitrogen in the range of approximately 2 at. % to approximately 20 at. %.

7. A hard disk drive, comprising:

at least one magnetic media hard disk being adapted for rotary motion upon a disk drive motor spindle;

at least one slider device having a slider body portion being adapted to fly over said magnetic media hard disk;

a magnetic head being formed on said slider body for writing data to said magnetic media hard disk and reading data from said magnetic media hard disk;

said magnetic media hard disk, including:

a substrate;

a magnetic layer;

at least one underlayer being disposed between said substrate and said magnetic layer;

an overcoat layer being disposed above said magnetic layer, said overcoat layer being comprised of diamond-like carbon (DLC), and wherein carbon atoms of said DLC layer are generally implanted into said magnetic layer to a depth of less than approximately 10 Å, and wherein the density of said overcoat layer is between approximately 2.0 g/cm^3 and approximately 2.9 g/cm^3.

8. A hard disk drive as described in claim 7 wherein the thickness of said overcoat layer is from approximately 25 Å to approximately 100 Å.

9. A hard disk drive as described in claim 7 wherein the thickness of said overcoat layer is from approximately 25 Å to approximately 60 Å.

10. A hard disk drive as described in claim 7 wherein the thickness of said overcoat layer is approximately 35 Å.

11. A hard disk drive as described in claim 7 wherein said overcoat layer includes nitrogen.

12. A hard disk drive as described in claim 11 wherein said overcoat layer includes nitrogen in the range of approximately 2 at. % to approximately 20 at. %.

13. A process for fabricating a magnetic media hard disk comprising the steps of:

fabricating a magnetic media layer upon a surface material of a substrate;

fabricating a diamond-like carbon (DLC) layer upon said magnetic layer, including the steps of:

fabricating an initial thickness DLC layer portion upon said magnetic layer utilizing a relatively low ion carbon beam energy;

fabricating a subsequent thickness DLC layer portion upon said initial thickness DLC layer portion utilizing a relatively high carbon ion beam energy.

14. A process for fabricating a magnetic media hard disk as described in claim 13 wherein said relatively low carbon ion beam energy is approximately 10 eV to approximately 20 eV.

15. A process for fabricating a magnetic media hard disk as described in claim 14 wherein said relatively high ion beam energy is approximately 100 eV.

16. A process for fabricating a magnetic media hard disk as described in claim 13, including the further step of fabricating an intermediate thickness DLC layer portion between said initial DLC layer portion and said subsequent DLC layer portion, wherein said intermediate thickness DLC layer portion is fabricated utilizing a relatively mid-range carbon ion beam energy between said relatively low carbon ion beam energy and said relatively high carbon ion beam energy.

17. A process for fabricating a magnetic media hard disk as described in claim 16 wherein said intermediate carbon ion beam energy is approximately 50 eV.

18. A process for fabricating a magnetic media hard disk as described in claim 17 wherein said DLC layer has a thickness of approximately 10 Å following the deposition of said initial thickness DLC layer portion, and said DLC layer has a thickness of approximately 19 Å following the deposition of said intermediate thickness DLC layer portion, and said DLC layer has a final thickness of approximately 25 Å following the deposition of said subsequent thickness DLC layer portion.

19. A method for fabricating a magnetic media hard disk as described in claim 18 wherein said DLC layer is formed with a density of approximately 2.0 g/cm^3 to approximately 2.9 g/cm^3.

20. A method for fabricating a magnetic media hard disk as described in claim 13 wherein nitrogen ion species are deposited within said subsequent thickness DLC layer portion.

21. A process for fabricating a magnetic media hard disk as described in claim 20 wherein said nitrogen species are deposited in a range of approximately 2 at. % to approximately 20 at. %.

22. A method for fabricating a magnetic media hard disk comprising the steps of:

fabricating a magnetic material layer upon a material surface of a substrate;

fabricating a diamond-like carbon (DLC) layer upon said magnetic layer, wherein said DLC layer is fabricated in the steps of:

depositing carbon ion species upon said magnetic layer utilizing a relatively low carbon ion beam energy of from approximately 10 eV to approximately 20 eV, to deposit an initial DLC layer thickness;

subsequently increasing the carbon ion beam energy level as the thickness of said DLC layer increases due to deposition of carbon ion species within said DLC layer, such that higher energy carbon ion beam species become implanted within said DLC layer thickness.

23. A method for fabricating a magnetic media disk as described in claim 22 wherein said carbon ion beam energy level is varied smoothly with time.

24. A method for fabricating a magnetic media hard disk as described in claim 22 wherein said carbon ion beam energy level varies as a step function with time.

25. A method for fabricating a magnetic media hard disk as described in claim 23 wherein nitrogen ion species are implanted within said DLC layer thickness.

26. A method for fabricating a magnetic media hard disk as described in claim 25 wherein said nitrogen ion species are included within said DLC layer in a range of approximately 2 at. % to approximately 20 at. %.